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INTEROFFICE CORRESPONDENCE

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DATE: February 2, 1994

TO: D. R. Ferrier, ERM Solar Pond Projects, Bldg 080

FROM: *LGP* L. G. Peppers, Materials & Surface Technologies, Bldg 881, 4652

SUBJECT: CORROSION OF METAL CONTAINERS USED TO STORE PONDCEMENT
LGP-001-94

Reference: a) J. D. Roberts ltr, JDR-001-94, to D. R. Ferrier, "New Project For FY95 Waste Solidification (Pad Operations) Work Package: Corrosion Inside Metal Containers, January 3, 1994

Purpose

At the request of Scott Kozel, Waste Management Systems Engineering (WMSE), Larry Peppers, Materials & Surface Technologies (MST) and Bruce Allen, Non-Destructive Testing Technical Support (NDTTS) inspected several 4' x 4' x 7' metal containers for corrosion. The metal containers are used to store tri-wall boxes of pondcrete and provide the RCRA required secondary containment for the mixed hazardous waste

Discussion

MST inspected one metal container (located on the 904 pad) used to contain excess surface water from the berm area around the tents. The interior of the container showed extensive delamination of the interior coating and subsequent rusting of the carbon steel container. This container is a typical example of what was seen inside the same type of container used to store the pondcrete waste

MST and NDTTS inspected four containers in one of the tents on the 750 pad for external corrosion and remaining metal wall thickness. The 14-gage steel containers have a nominal thickness of 0.0667" and a minimum thickness of 0.0567". The exterior of the containers showed evidence of having been repainted on at least one occasion. There was no indication of corrosion outside of normal handling damage to the outside of the container.

NDTTS measured the remaining wall thickness on four containers (two containing water) from the outside. The readings were taken through the exterior paint. The measured wall thicknesses varied from 0.042" on one container to 0.086" on another container. These readings were considered suspect due to the presence and influence of the paint on the thickness readings. Scott Kozel coordinated with the painters to have patches of the paint removed on three of the four containers so that thickness measurements could be made directly on the metal.

Reviewed for Classification/UCNI

By *Wendy A. Stickney* (u) / *W*Title/Org *Manager / MST*Date *2-2-94*

D. R. Ferrier
February 2, 1994
LGP-001-94
PAGE 2

surface. When remeasured, the remaining metal thicknesses varied from 0.064" to 0.068" indicating that very little metal has been lost on the interior of the containers due to corrosion.

Paint thicknesses were measured directly adjacent from where the paint was removed using a magnetic pull-off gauge and the total thickness of the paint and metal was remeasured using an ultrasonic thickness probe. The paint thickness was either in the range of 3.5-4.5 mils (1 mil = 0.001") on original paint from the factory or 5.0-6.0 mils in areas that appeared to have been repainted. Thickness measurements over the original paint areas added about three times the paint thickness to the total metal reading (about 10-15 mils). Measurements over the repainted areas showed thickness readings less than the actual metal thickness (0.042-0.053") indicating that the paint was not adequately bonded to the old paint/metal surface. The measured readings in this case are probably the result of multiple reflections of the ultrasonic signal through the paint due to the poor bond. This exercise illustrates that caution should be used when using thickness measurements made over exterior paint.

Results

The remaining metal thickness of the containers is at the nominal original wall thickness indicating that the interior rust is of a protective nature. MST recommends that the containers with water in them be drained and the interior dried as well as possible. A random sample of the containers should be inspected about every five years to monitor for corrosion. Based on the current condition of the containers, the containers should last a minimum of twenty years with routine monitoring and necessary exterior maintenance painting.

Response Requirements

No response is required. If you have questions, please contact L. G. Peppers at x4652 or pager D1992.

LGP 1gp

cc

B L Allen	R V Morgan
E C Dunn	R W Nokes
T G Hedahl	R L. Rising
T R Hergert	W A Sticka <i>WAS</i>
S R Keith	-S G Stiger
S T Kozel	file